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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,798	10/17/2003	Minwen Ji	200300737-1	9836

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EXAMINER

MUI, GARY

ART UNIT	PAPER NUMBER
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2616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/687,798

Applicant(s)

JI, MINWEN

Examiner

Gary Mui

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 19 is objected to under 37 CFR 1.75 because of the following informalities:

For claim 19, it is suggested to the applicant to insert a period, ---, to end the claim because a claim should end with a period. See MPEP 608.01(m).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 28 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For claim 28, the occurrence of "1/n of the flow" is vague and indefinite because the value of n is not defined, such that in the cases where the value of n is less than or equal to 0 will produce values that will make the number of flows indefinite.

Claim 29 is rejected because it depends on a rejected claim.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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5. Claims 9 – 15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

For claims 9 – 15, the claims are directed to a computer pre se, which is non-statutory subject matter. The claims recites a storage medium comprising program instructions; the claims fails to mention that the storage medium is a computer readable medium and that the storage medium is embodied with, encoded with, or stored with computer executable instruction and without this components the functionality of the claimed invention cannot be carried out.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1 – 6, 9 – 14, 15 – 22 are rejected under 35 U.S.C. 102(e) as being anticipated by DeJager et al. (US 6,473,424 B1).

For claim 1, DeJager et al. teaches forwarding a packet along a first link of the multipath network; tracking a load of the first link subsequent to forwarding the packet; and preserving the first link for a subsequent packet having the same flow address as the forwarded packet upon determining a desired load change of the first link is less than a predetermined value

(see column 3 lines 1 – 9 and 13 – 15, packets received with the same stream ID sent to the same port and the utilization is monitored).

For claims 2 and 3, DeJager et al. teaches modifying link designations to forward packets along upon determining the desired load change of the first link is greater than the predetermined value and the designating a second link to send the subsequent packet along (see column 2 lines 52 – 56, streams will be forwarded to a new port depending on the current port utilization).

For claim 4, DeJager et al. teaches preserving the first link to send the subsequent packet along (see column 4 lines column 2 lines 58 – 62, the first port is still in use before a different port is used).

For claims 5 and 6, DeJager et al. teaches tracking one or more variables associated with the load of the first link (see column 4 line 34 – 37, tracking the utilization of the port)

For claim 9, DeJager et al. teaches adjust positions of one or more pointers used to partition traffic flow through a multipath network, wherein the positions of the one or more pointers are variable relative to a range of hash units that correspond to flow addresses within the multipath network (see column 2 lines 52 – 56 and column 3 lines 39 – 56, a computer program is used to switch between the current port and the new port).

For claim 10, DeJager et al. adjusting the positions of the one or more pointers comprise program instructions for modifying a position of one pointer at a time (see column 2 lines 52 – 56 and column 3 lines 39 – 56, the time interval for the load balancing).

For claim 11, DeJager et al. teaches modifying a hash number of a first pointer positioned between a highest loaded link and a least loaded link; and subsequently modifying a has

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number of a second pointer positioned between a second highest loaded link and a second least loaded link (see column 3 lines 24 – 32).

For claim 12, DeJager et al. teaches adjusting the positions of the one or more pointer are directed for use by an individual router of the multipath network (see column 3 line 16 – 17).

For claim 13, DeJager et al. teaches calculating an average amount of load per hash unit for individual links coupled to the router; and calculating a desired load change on the individual links (see column 7 lines 58 – 64).

For claims 14 and 15, DeJager et al. teaches selecting a link of the multipath network to send a packet along based upon a hash number representative of a flow address of the packet and relative hash numbers of one or more the pointers and hashing the flow address of the packet (see column 3 lines 19 – 32 and column 9 lines 23 - 26).

For claim 16, DeJager et al. teaches multiple ports for coupling to links of a network (see figure 1 box X₂); and a storage medium (see figure 1 box S₂) comprising program instructions executable using a processor for selectively directing a data packet to one of the multiple ports; and altering one or more of the conditions by which the data packet is selectively directed (see column 4 lines 34 – 37).

For claim 17, DeJager et al. teaches hash number values of one or more variable pointers configured to partition a range of hash numbers associated with possible flow address of the data packet (see column 3 lines 24 – 32).

For claim 18, DeJager et al. teaches specific hash number ranges associated with possible flow addresses of the data packet (see column 3 lines 24 – 32).

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For claim 19, DeJager et al. teaches altering the one or more conditions to reflect a load balancing policy of the router (see column 7 lines 7 – 10).

For claim 20, DeJager et al. teaches accounting for the capacity of the links coupled to the multiple ports when the one or more conditions are altered (see column 7 lines 59 – 62).

For claim 21, DeJager et al. teaches altering the one or more conditions to monotonically balance loads between two of the multiple ports (see column 4 lines 34 – 37).

For claim 22, DeJager et al. teaches redirecting the data packets to another of the multiple ports upon detecting the one multiple port cannot accept the data packet (see column 4 lines 34 – 38).

For claim 23, DeJager et al. teaches multiple stations configured to send and receive data packets (see figure 1 boxes $C_1 - C_2$) and a plurality of routers (see figure 1 boxes X_1 and X_2) interposed between the multiple stations and interconnected by a mesh of links, selectively directing a first packet along a link coupled thereto in accordance with one or more variable pointers included with the router; and record the status of the one or more variable pointers to direct a second packet having the same source and flow addresses as the first packet along the same link (see column 3 lines 1 – 9, packet are sent to a port and packets with the same stream ID are sent to the same port).

For claim 24, DeJager et al. teaches to alter the positions of the one or more variable pointers (see column 4 lines 34 – 37).

For claim 25, DeJager et al. teaches to track the load conditions of the links coupled thereto (see column 2 lines 49 – 51).

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For claim 26, DeJager et al. teaches change transmission control protocol connections among links of differing lost rates associated with the router (see column 4 line 34 – 37, switching between different ports based on the current port utilization).

For claim 27, DeJager et al. teaches a router (see figure 1 box X₂); periodically change transmission control connections among links of different lost rates which are coupled to the router (see column 4 line 34 – 37, switching between different ports based on the current port utilization).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeJager et al. further in view of the background of Li et al. (US 6,381,252 B1).

For claims 7 and 8, DeJager et al. teaches all of the claimed subject matter with the exception of the one or more variables comprise a delay of the first link and the one or more variable comprises a loss rate of the first link. Li et al. from the same field of endeavor teaches in the background the communication attributes measured can relate to that at least one parameter such as latency, packet lost rate, and bandwidth (see column 2 lines 40 – 42). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to the variable be a delay or loss rate as taught in the background of Li et al. into the traffic flow management as taught by DeJager et al. The motivation for doing this is with more variables used in calculations the system will become more efficient.

Allowable Subject Matter

11. Claims 28 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

For claim 28 and 29, the prior art fails to show alone or in combination modifying designations of hash numbers associated with the links such that $1/n$ of the flows switch from the lowest-loss link to the highest-loss link and the remaining flows switch from a higher-loss link to a lower-loss link

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chin et al. (US 5,959,968), Cao et al. (US 6,888,797 B1), Kim et al. (US 7,082,101),

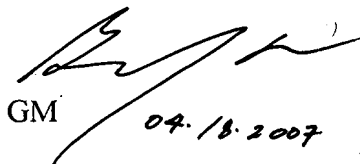
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Kodialam et al. (US 2002/0067693 A1), Shinagawa (US 2003/0072261 A1), Garcia-Luan-Aceves et al. (US 2003/0107992 A1), and Guerrero (US 2003/0223413 A1) are cited to show Traffic flow management through a multipath network.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary Mui whose telephone number is (571) 270-1420. The examiner can normally be reached on Mon. - Thurs. 9 - 3 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


GM 04.18.2007


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